FIRM/C 756

LIBRARY

SEP 2 7 1983

National Marine Fisheries Service
2570 Dole Street
Honolulu, Hawaii

RECORD OF INFORMAL SCORRAD DISCUSSION
Bali, Indonesia, 13-18 November 1982

by

Marine Resources Service
Fishery Resources and Environment Division

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, June 1983

PREPARATION OF THIS DOCUMENT

This is the report of informal discussions held during the session of the Indo-Pacific Fisheries Commission, Bali, Indonesia, 13-18 November 1982, as part of the inter-sessional activities of IPFC's Standing Committee on Resources Research and Development (SCORRAD).

ABSTRACT

Discussions included the follow-up of the Third Session of IPFC's Standing Committee on Resources Research and Development (SCORRAD); arrangements for future IPFC Symposia, and the future work of SCORRAD in coordinating fishery research in the Indo-Pacific region.

W/Q 3541

For bibliographic purposes this document should be cited as follows:

FAO, Marine Resources Service, Fishery Resources and Environment Division, Record of informal SCORRAD discussion, Bali, Indonesia, 13-18 November 1982. FAO Fish. Circ., (756):13 p.
1983

FAO Fisheries Circular (FAO Fish.Circ.)

A vehicle for distriburion of short or ephemeral notes, lists, etc., including provisional versions of documents to be issued later in other series.

TABLE OF CONTENTS

		Page
1.	INTRODUCTION	1
2.	FOLLOW-UP TO THE 3RD SESSION OF SCORRAD, SYDNEY, APRIL 1982	1
3.	ACMRR WORKING PARTY ON THE MANAGEMENT OF TROPICAL NEAR-SHORE RESOURCES	1
4.	US/AID COOPERATIVE RESEARCH SUPPORT PROGRAMME IN STOCK ASSESSMENT	1
5.	ARRANGEMENTS FOR FUTURE IPFC SYMPOSIA	1
6.	FUTURE WORK OF SCORRAD, AND PREPARATIONS FOR THE NEXT MEETING	1
7.	INLAND FISHERIES	3
8.	FAO/UNDP TUNA PROJECT	3
APPENDIX 1 -	LIST OF THOSE ATTENDING SCORRAD DISCUSSIONS	5
APPENDIX 2 -	AD HOC MEETING OF WORKING PARTY OF EXPERTS ON INLAND FISHERIES	7

1. Introduction

At the request of the Chairman of SCORRAD, Dr. R.S. Shomura (U.S.A.), advantage was taken of the presence in Bali, Indonesia for the joint IOFC/IPFC Session, of several members of SCORRAD, and of others interested in the work of the Committee, to hold a number of informal meetings. In view of the relevance of these discussions to several aspects of resources in the IPFC region, and especially to the preparations for the next session of SCORRAD, this note is being widely circulated to those interested, though it should be stressed that it is not a formal record of formal SCORRAD proceedings.

2. Follow-up to the 3rd Session of SCORRAD, Sydney, April 1982

It was noted that one recommendation of the Sydney meeting, concerning the importance of good communications, had been drawn to the attention of IPFC by its Executive Committee. Others, e.g., on drawing the attention of the IPFC Working Party on Fish Technology and Marketing to the question of squid processing and marketing, had also been acted on. FAO was asked to prepare a full report on follow-up to each recommendation for the next meeting of SCORRAD.

3. ACMRR Working Party on the Management of Tropical Near-shore Resources

Dr. J.A. Gulland reported on the preparations being made for this meeting. Some comments were made on the draft annotated agenda. It was agreed that the subject of the Working Party was of considerable interest to SCORRAD, and it was hoped that a report of the Working Party meeting would be made available to SCORRAD.

4. US/AID Cooperative Research Support Programme in Stock Assessment

Prof. B.J. Rothschild, University of Maryland, informed the meeting of the preparations for the CRSP, which would involve support by US/AID to cooperative research between universities in the United States, and research institutes in developing countries. There was considerable interest in this proposal, and discussions were continued separately with Prof. Rothschild. This may lead to projects in, among others, Indonesia, the Philippines and Thailand.

5. Arrangements for Future IPFC Symposia

This matter was also discussed during the plenary IOFC/IPFC Session. Since these discussions were not reported in detail in the formal report of the session, this note covers some of the points made in these discussions, as well as in the informal SCORRAD meetings. It is clear that symposia are useful and welcomed. They need careful preparation, so there will be no symposium at the next IPFC Session (1984), but one in 1986. The proposed topic is "The resources of the IPFC region; progress in their development and management in the national interests". An offer was made by the Chairman of SCORRAD to IPFC to help prepare the symposium. It seems now up to SCORRAD at its next meeting to prepare for submission to the next IPFC Session a fairly detailed proposal for the next symposium - agenda, type of papers required, suggestions for convenors/chairmen, etc. - for consideration by the Commission. It was also pointed out in the plenary session that some of the papers might need for their preparation, collection of special data. In reply to a question from the SCORRAD Chairman, FAO agreed to supply some ideas and guidelines for the collection of such data. This would be done in consultation with the Chairman and other interested members of SCORRAD.

6. Future Work of SCORRAD, and Preparations for the Next Meeting

There was considerable discussion of the scope of SCORRAD work, bearing in mind its very broad terms of reference. It was agreed that it should not be a 'biologists' club' and should give careful attention to such matters as the social or economic implications of the biological work. At the same time it was also stressed (particularly by the economists present) that discussions of academic theories of resource economics should be avoided. What was needed was topics for discussion that would bring the different pro-

fessional interests together. With this, and the principle of concentrating on a few selected topics, in mind, the following agenda for the next meeting of SCORRAD was agreed:

(a) Follow up on previous meeting.

(b) Preparations for the next IPFC Symposium.

(c) Results of the introduction of EEZ on national fisheries of the region.

(d) Tuna fisheries, with particular reference to the establishment of a data centre.

(e) Demersal resources, with particular reference to

(i) Changes in species composition.

(ii) Management through control of the gear used.

Item (a) is straightforward. It should be covered adequately by a written report by FAO, and should not take much time at the meeting.

Item (b) is covered by section 5 above.

Item (c) should not cover all the changes that have taken place in national fisheries as a result of the Law of the Sea discussions. Detailed discussions will be covered in other meetings. It was suggested that the SCORRAD discussions should be concentrated on those situations where the imposition of a 200-mile limit has had a direct and significant impact. In the IPFC region the main fisheries concerned are some tuna fisheries, the Thai trawl fishery, and the fisheries round New Zealand and Australia. The discussions should, however, not be limited to the effect on the resources, but include economics and marketing.

Item (d) should give particular attention to the UNDP/FAO tuna project in Colombo, established to set up a data and information centre for the tuna fisheries of the Indian Ocean and Western Pacific. A report from the Project Manager of that project is likely therefore to be one of the main documents for the SCORRAD meeting. The Committee should give guidance and comments on the ways in which the data are being collected, and on the methods of processing, and on the types of output produced. In addition the Committee should look at significant new developments in the tuna fisheries in the region (e.g., the Philippines fishery, and the expansion of the U.S. into the Western Pacific), and in view of the planned expansion of catches by several countries, the medium- to long-term prospects in the tuna market. (It was suggested that the US/NMFS could produce a review paper on this last item).

On Item (e) it was felt that a comprehensive discussion of the demersal fisheries would be best done as part of the 1986 Symposium, and that the next SCORRAD meeting should concentrate on the two topics - species changes, and gear control as a management tool. On the first, it would be useful to document (i) examples of changes in species composition as a result of, or at least coincidental with, the development of heavy fishing, e.g., Gulf of Thailand, and (ii) any evidence of changes in demersal species composition unconnected with fishing. SCORRAD should consider also the social/economic implications of these changes - e.g., the relative market prices of different species, and the degree to which a decreasing species can be substituted in the market by a relatively increasing species. The increase in squid in Thailand was particularly noted. It was suggested that increasing fishing on squid might be desirable in order to facilitate the recovery of some of the demersal fish species, but this would depend not only on the nature of the interaction between species, but also on the relative values of squid and the various fish species. It was also noted that in the last three years the squid in the Gulf of Thailand seemed to be decreasing, so that the earlier increase might be part of a long-term cycle, possibly in phase with cycles in other species.

Mention was also made of the value of looking at species changes that have taken place in other fish stocks, including African lakes.

On the second item, three examples were mentioned - the use of a separator trawl to reduce by-catch in the shrimp fisheries; the use of high-opening trawl to vary species composition, and the use of mesh regulations. The studies on these by Indonesia/USA, India, and by Malaysia on the first and third of these respectively were specifically mentioned. SCORRAD should look at the impact of different gears on the resources, and on the immediate and long-term success (in economic terms) of the fishery.

Apart from discussing these detailed topics for the next SCORRAD session, the meeting also stressed the more general value of SCORRAD as a forum at which the younger scientists in the region in particular could meet together to exchange ideas and present the results of their research.

7. Inland Fisheries

Dr. Welcomme reported on discussions that had been held between those attending the IOFC/IPFC meeting interested in this topic. The report of these discussions is given as Appendix 2.

8. FAO/UNDP Tuna Project

The project leader of this project explained the aims of this project and the steps being taken to implement it. It was agreed that setting up a data and information centre on the tuna fisheries of the Indian Ocean and Western Pacific served an important regional interest. The output from such a centre was vital to any country planning to develop its tuna fisheries, and for the management of these fisheries. Establishment of the centre and ensuring that data are properly reported, checked and processed, and appropriate reports produced is difficult and time-consuming. Several people stressed that the problems were not simply those of data processing, and that the project staff should have sufficient familiarity with the substance of the material to ensure that they were not, in computer technology, just processing garbage. In view of the importance of the work and the time likely to be necessary to get the system properly in operation, it was hoped that UNDP could ensure adequate funding at least up to the end of its present cycle.

APPENDIX 1

LIST OF THOSE ATTENDING SCORRAD DISCUSSION

Dr. Richard Shomura
Director, Honolulu Laboratory
Southwest Fisheries Center
National Marine Fisheries Service
P.O. Box 3830
Honolulu, Hawaii 96812
U.S.A.

Mrs. A.B. Reyes
Supervising Management and Audit Analyst
Bureau of Fisheries and Aquatic Resources
Arcadia Building
860 Quezon Avenue
Quezon City 3008
Philippines

Mr. R.M. Chilvers
Assistant Director (Fisheries)
Agriculture and Fisheries Department
Canton Road Government Offices
393, Canton Road, 13th Floor
Kowloon, Hong Kong

Dr. Janet Brown
U.K. Technical Cooperation Officer
UNDIP/Newcastle Cooperation
University of Diponegoro
Semarang, Indonesia

Dr. G.I. Murphy
Senior Principal Research Scientist
Division of Fisheries and Oceanography
CSIRO
P.O. Box 21
Cronulla, N.S.W. 2230
Australia

Mr. W. Bour
Laboratoire ORSTOM
B.P. A5
Noumea Cédex
New Caledonia

Mohd. Shaari Sam Abdul Latiff
Director of Research
Fisheries Research Institute
Glugor, Penang
Malaysia

Dr. Thiraphan Bhukaswan
Director
National Inland Fisheries Institute
Kasetsart University Campus
Bangkhen, Bangkok 10900
Thailand

Dr. R. Bain
First Assistant Secretary
Fisheries Division
Department of Primary Industry
Edmund Barton Building
Barton, Canberra, A.C.T. 2600
Australia

Prof. B.J. Rothschild
Chesapeake Biological Laboratory
University of Maryland
Box 38, Solomons
Maryland 20688
U.S.A.

Dr. Veravat Hongskul
Secretary-General
Southeast Asian Fisheries Development
Center (SEAFDEC)
4th Floor, Olympia Building
956 Rama IV Road
Bangkok 10500
Thailand

Dr. R. Neal
Director-General
International Center for Living Aquatic
Resources Management (ICLARM)
MCC P.O. Box 1501
Makati, Metro Manila
Philippines

Dr. E.G. Silas
Director
Central Marine Fisheries Research Institute
Willingdon Island
P.O. Box 1912
Cochin 682 018
Kerala, India

Mr. Bun Nil Hwang
Senior Research Scientist
Coastal and Offshore Resources Section
Fisheries Research and Development Agency
16-2 Ga, Namhang-Dong
Yeongdo-Gu, Busan
606 Rep. of Korea

Mr. M.A. Barnes
Fisheries Adviser
International Cooperation Division
Ministry of Foreign Affairs
91999 Jerusalem
Israel

Dr. R.E. Kearney
South Pacific Commission
Boîte Postale D-5
Noumea Cédex
New Caledonia

Mr. G. Duncan Waugh
Director of Fisheries Research
Fisheries Research Division
Ministry of Agriculture and Fisheries
P.O. Box 297
Wellington
New Zealand

Mr. T. Sujastani
Co-Manager
UNDP/FAO Indonesian Fisheries Development
(INFIDEP)
c/o UNDP Office
P.O. Box 2338
Jakarta
Indonesia

Dr. M. Unar
Director
Central Research Institute for Fisheries
Jl. Ks. Tubun
P.O. Box 30, Palmerah
Jakarta
Indonesia

Mr. P. Martosubroto
Marine Fisheries Research Institute
Agency for Agricultural Research and
Development
Jalan Krapu No.12
Jakarta-Utara
Indonesia

Mr. G.S. Merta
Marine Fisheries Research Institute
Agency for Agricultural Research and
Development
Jalan Krapu No.12
Jakarta-Utara
Indonesia

Dr. Loh-Lee Low
Resource Ecology and Fisheries Management
Division
Northwest and Alaska Fisheries Center
National Marine Fisheries Service
2725 Montlake Boulevard East
Seattle, Washington 98112
U.S.A.

Dr. W.E. Ripley
Interregional Fisheries Adviser
Division for Global and Interregional
Projects, UNDP
One United Nations Plaza, New York, N.Y.10017
U.S.A.

Mr. P. Hooker
Programme Leader
UNDP/FAO Tuna Resources Development and
Management in Indo-Pacific
P.O. Box 1505
Colombo 7
Sri Lanka

Dr. J.A. Gulland
Chief, Marine Resources Service
Fishery Resources and Environment Division
Fisheries Department
FAO
Rome, Italy

Dr. R.L. Welcomme
Senior Fishery Resources Officer
Fishery Resources and Environment Division
Fisheries Department
FAO
Rome, Italy

APPENDIX 2

AD HOC MEETING OF WORKING PARTY OF EXPERTS ON INLAND FISHERIES

12 November 1982, Denpasar, Bali, Indonesia

A. The first meeting of the IPFC Working Party of Experts on Inland Fisheries was held in Bangkok, 17-19 January 1978. Since then the Working Party has not been able to meet. As the next meeting of the Working Party is not scheduled until January 1984, an informal meeting was arranged on 12 November during the Joint IOFC/IPFC Session to:

(i) review implementation of the programme suggested by the first session;

(ii) review the report of the IPFC Workshop on Inland Fisheries for Planners (IOFC/IPFC/82/Inf.4);

(iii) advise on orientation and topics for the next session of the Working Party;

(iv) suggest programme for the next year.

The meeting was attended by 17 persons as listed on Page 12.

B. Implementation of programme since first meeting of the Working Party (Bangkok, 17-19 January 1978)

Most of the actions recommended by the Working Party have been implemented in the four years which have elapsed since its first session.

(i) Reservoir research and management; A technical paper (FIRI/T.207, Management of Asian Reservoir Fisheries) prepared by Thirapan Bhukaswan, was released in 1980. This will be complemented by a further technical paper by Elvira Baluyut to be published next year.

(ii) Introduced species: A Register of International Transfers of Fish Species (FIRI/T.213) was issued in 1981. This includes much data from the IPFC region, thanks to the participation of many individual fishery workers. The register should be updated periodically.

(iii) Research on anadromous species: The coordinated research project did not start work and with the retirement of the proposed convenor probably will not do so. However, a consultant with the Bangladesh project has completed a preliminary study of the Hilsa fishery there and his data will be published and made available to other interested IPFC countries and workers.

(iv) Study on effect of dams on floodplain fisheries: No action.

(v) Pollution of inland waters: Provision has been made in our 1983 budget for a consultant to visit some countries in the region to assess the state of pollution in their waters and to propose follow-up actions. UNEP is not, however, interested in working with individual inland waters.

(vi) Infestation with aquatic weeds: No action.

(vii) Statistics: No direct action by FAO and no reports by individual countries. A first draft of country statements on inland fisheries was circulated before the meeting and some answers have been received. However, confusion persists on the amount of inland fish production, particularly that for aquaculture and the grey zone between aquacultural and capture fisheries.

(viii) Mangrove swamp and brackishwater ecology: There have been several actions at headquarters and elsewhere on this topic. There is, for example, growing co-operation between the FAO Forestry and Fisheries Departments on ecological and management problems of such areas. Furthermore a headquarters staff member is working full time in these areas and has produced several technical review papers. Finally, the South China Sea project in their series of publications SCS/80/WP produced reviews of the present state of mangrove ecosystem for Singapore, Thailand, Malaysia, Indonesia and the Philippines as well as a regional summary.

(ix) Information on basic biology of fish species: No direct action by FAO.

(x) Publications of technical information: Although FAO is not able directly to assist in this, a newsletter on aquaculture is issued by the Network of Aquaculture Centre in Asia. Further publications by organizations other than FAO also appear, for instance those issued by ICLARM.

(xi) Fisheries legislation: No action necessary.

(xii) Information on activities by other bodies working on inland fisheries: No action taken.

(xiii) Regional Workshop on Inland Fisheries for Planners: This was held in Manila, Philippines between 2-6 August 1982. The report is available as document IOFC/IPFC/82/Inf.2 and the conclusions and recommendations are listed in section C of this report.

Other recommendations made at the last session in Kyoto for Training Centres in Riverine Fisheries on Lake and Reservoir Fisheries have not been pursued for lack of funds.

C. Report of IPFC Workshop on Inland Fisheries for Planners

The Workshop was held in Manila, Philippines on 2-6 August 1982. It was attended by delegates from seven countries, 12 speakers and 14 observers. Participants represented a mix of disciplines concerned with fisheries, hydrology and several aspects of agricultural resource planning.

The following observations and recommendations were formulated by the Workshop:

1. Fishery Planning in River Basin Development Planning

Government fishery planners have felt that their participation in planning for fishery development within the framework of an overall river basin development is not usually requested early enough to enable them to carry out all necessary preparation work for a successful fishery development plan, which would minimize conflicts with other users, and optimize benefits for the fishery sector.

Government fishery planners, through their respective fisheries and/or planning agencies, should bring about an increased awareness and concern to plan for fisheries in river basin development schemes by:

(a) underscoring the necessity for institutional mechanisms to include fishery interests in overall planning, design and implementation; and

(b) having the competing uses of water systems seek to optimize resource use in harmony with or compatible with fisheries.

2. Fishery Interest vs. Other Interests

Even when fishery organizations are informed about new projects in time, interaction between fishery interests and other interests appears to be inadequate during the planning stage.

It was felt that, during the planning stage, the constraints eventually to be imposed by other users on fishery development are not adequately clarified and explained. There should be more concern given to assessing damages and benefits of each user in relation to the fishery benefits and losses in the planned new environment. This should involve both monetary and social evaluation of each alternative, including the replacement of the lost fishery.

There is need for guidance on the general and specific issues of fishery planning in the multiple-use resource context. Such guidelines should assist in considerations aimed at minimizing conflicts and maximizing benefits at the planning stage. While most of the major technical issues essential for successful planning for fishery management of new projects are reasonably well understood, it is felt that there is a need for a more specific guidance for fishery planners to enable them to better liaise with planners for other uses.

There is a need for supportive information and data relevant to policy formulation and decision-asking options in river basin development schemes. Information requirements include:

(i) appropriate baseline studies;

(ii) planning guidelines and fisheries development framework;

(iii) environmental impact studies on non-fishery activities (e.g., mining, agriculture, logging, etc.) and their impacts on fisheries;

(iv) alternatives and options in approaches and implementation for other users that will not jeopardize fisheries or at least minimize damage to it.

It is suggested that, as a follow-up to this Workshop, meetings on planning needs for harmonious fishery development are organized in each IPFC member country which has an interest in this topic. Such meetings could be organized by FAO through its regional IPFC office in close liaison with other organizations of the UN system with relevant expertise. The preparation for these meetings should involve all future non-fishery primary users such as irrigated agriculture, drainage and floodplain agriculture, mining, hydropower production and some others. The non-fishery agencies should provide their respective opinions on the fishery components of each planned development.

It is suggested that governments, wherever appropriate, require the incorporation of fisheries concerns in river basin development schemes through the following means:

(i) the inclusion of said conditions in their planning laws or national legislation;

(ii) the creation of posts for fisheries experts in all river basin development projects;

(iii) the incorporation of fisheries concerns at policy, planning and management stages of river basin development.

3. Local Competence/Expertise

Most countries appear to have satisfactory institutional mechanisms for planning and implementing of multiple-use river basin development projects. Examples are the Mahaweli project in Sri Lanka, the Agno river basin development project in the Philippines, the multi-national Mekong River development project in the countries bordering the Mekong.

The establishment of a regional mechanism for TCDC/ECDC with international support seems to be in order for the exchange of appropriate technologies as practised in developing member countries (Mekong, Laguna Lake, Thailand's cage culture techniques, etc.). The FAO Regional Fisheries Officer can act as broker between countries in need of expertise and those able to provide the desired expertise and/or information. The FAO Inland Water Resources and Aquaculture Service in Rome can lend assistance in obtaining and/or recruit-

ing expertise and information. The FAO Country Representatives, as well as the FAO fisheries projects (e.g., SCS, INFOFISH, BOBP, ADCP), can be contact points. It is much on the IPFC Working Party of Experts on Inland Fisheries and the IPFC Working Party on Aquaculture to explore and coordinate such activities.

4. Role of International Agencies

FAO, as an advisory and coordinating agency, can assist in promoting concern for fisheries within a multiple-use context by:

(i) increasing awareness of non-fishery planners for fishery issues, and vice-versa. FAO, together with some other UN organizations, has already prepared a series of manuals for inland fishery management and planning in relation to some other users. But more work still needs to be done;

(ii) developing a programme of assistance to developing countries in terms of:

- technical assistance in baseline river basin studies re fisheries;

- technical assistance in formulating fisheries planning, management and evaluation guidelines in river basin development.

There is need to communicate the concerns for fisheries development in the multiple-user context to international organizations (bilateral/multilateral, e.g., WB, ADB, CIDA, EEC, etc.) involved in river basin development schemes. More specifically, there is need to institutionalize on their aid/loan package the necessity of considering fishery concerns vis-a-vis hydropower, transport, irrigation and other projects.

FAO, ICLARM, UNDP can assist in conveying said concerns within the UN system as well as to agencies outside the UN system, i.e., bilateral donor agencies.

It is suggested that IPFC, through its Working Party of Experts on Inland Fisheries and the Working Party on Aquaculture, formulate cooperative programmes, engage consultants for the preparation of guidelines on fishery development under specific situations, and consider the establishment of training courses for inland fishery and aquaculture planners and managers with the overall objective of achieving the optimal development of fishery resources under the complex river basin development plans.

In considering these recommendations the meeting agreed that communication between fisheries workers and higher level planners was extremely important, although mechanisms do exist for the incorporation of fisheries considerations into the general planning process of large individual projects such as dams. However, in other countries the institutional framework is complex with several authorities or ministries responsible for managing the fish resource - for example the lot fisheries of Bangladesh or Philippines - and in such cases there is a need to communicate between two fisheries agencies especially to obtain complete statistics.

The difficulties of establishing the type of baseline studies and planning guidelines were emphasized. Approaches to the problem have been tried in other parts of the world, such as the use of simple indices - M.E.I or the various flow criteria established by the Instream Flow Group of Colorado, U.S.A. Nevertheless, such indices require a large set of data for their elaboration. This data does not exist widely in the region, although Indonesia and Thailand have initiated standardized sampling schemes.

D. Orientation and topic for the next session of the Working Party

The Working Party of Experts on Inland Fisheries and the Working Party on Aquaculture will be held consecutively at the beginning of 1984 which gives the possibility for some overlap between the two groups. After some discussion it was felt that as a continuation of work on reservoir and lake fisheries the most appropriate topic to be considered at this time would be the role of stocking and introduction in the improvement of production of lakes and reservoirs. The meeting could also consider the requirements for production of fish seed for stocking into natural waters.

The delegate from India kindly offered New Delhi as a site for the consecutive sessions of the Working Party and the Working Party on Aquaculture.

E. Programme for coming years

Attention was drawn to the continuing importance of riverine fisheries especially in view of their significance for small-scale fisheries. These fisheries should be protected and work should therefore continue on this sector.

(i) As a follow-up to the Workshop on Inland Fisheries for Planners FAO Headquarters should assemble and circulated background material for baseline studies and planning guidelines for river basin development schemes. Such material should include a summary of approaches used in other areas of the world, particularly the simple indices, as well as procedures for surveys such as are in use in Indonesia and Thailand. These latter should be sent by the scientists concerned to FAO Headquarters for comment and circulation.

FAO should also request and assemble a series of case studies where a wider planning approach has been adopted, e.g., the Mekong River, the Mahaweli and Agno Rivers.

Where possible seminars should be held within the various countries at national level on fishery problems in river basin planning. FAO could prepare the outline and background material for such seminars.

(ii) In preparation for the next meeting of the Working Party, individual workers should be contacted early after the session so they might begin collecting information on natural stocking practices for discussions during that meeting.

(iii) The consultant on aquatic pollution for inland fisheries and aquaculture could possibly visit the following countries to examine the existing data of pollution, identify problem areas for the future, advise on the infrastructure needed for monitoring and research and advise IPFC on any cooperative activities that may be needed in this sector: Indonesia, Malaysia, Philippines, Sri Lanka and Thailand. It would also be useful if the consultant could visit the NACA lead centre for aquaculture in India for a brief period to discuss research aspects and implication of pollution in aquaculture.

LIST OF PARTICIPANTS

India

MATHUR, B.B.L.
Assistant Commissioner (Fisheries)
Department of Agriculture and Cooperation
Ministry of Agriculture
Krishi Bhavan
New Delhi 110 001

Indonesia

DJAJADIREDJA, Rustami
Director, Inland Fisheries Research Institute
Agency for Research and Development of Agriculture
Department of Agriculture
1 Jalan Sempur, P.O. Box 51
Bogor

RAHARDJO, K.
Directorate General of Fisheries
Department of Agriculture
Jl. Salemba Raya 16
Jakarta

WAHJONO, Untung
Directorate of Production
Directorate General of Fisheries
Department of Agriculture
Jl. Salemba Raya 16
Jakarta

Israel

BARNES, M.A.
Fisheries Adviser
Organization for International Cooperation
Ministry of Foreign Affairs
91999 Jerusalem

Korea

YONG, Kim Kyung
Director, International Cooperation Division
National Fisheries Administration
Dae Woo Building
Jung-Ku, Nam Dae Mun-Ro
Seoul

Nepal

RAJBANSHI, K.G.
Chief Fisheries Development Officer
Fisheries Development Division
Department of Agriculture
Harihar Bhawan
Pulchowk, Lalitpur
Kathmandu

New Zealand

WAUGH, G. Duncan
Director of Fisheries
Fisheries Research Division
Ministry of Agriculture and Fisheries
327 Willis Street
P.O. Box 297
Wellington

Philippines

REYES, Aurora
Supervising Management and Audit Analyst
Bureau of Fisheries and Aquatic Resources
Arcadia Building
860 Quezon Avenue
Quezon City 3008
Metro Manila

Sri Lanka

FERNANDO, C.
Director, Planning and Programming
Ministry of Fisheries
P.O. Box 1707
Galle Face
Colombo

JAYEWARDENE, H.W.
Ambassador
Ministry of Foreign Affairs and
Chairman, National Aquatic Resources Research and Development Agency
218 Bullers Road
Colombo 7

Thailand

BHUKASWAN, Thiraphan
Director
National Inland Fisheries Institute
Kasetsart University Campus
Bankhen, Bangkok 10900

United Kingdom

CHILVERS, R.M.
Assistant Director (Fisheries)
Agriculture and Fisheries Department
Canton Road Government Offices
393, Canton Road, 13th Floor
Kowloon, Hong Kong

WILLOUGHBY, N.
UK Technical Cooperation Officer
UNDIP/Newcastle Cooperation
University of Diponegoro
Jalan Imam Barjo 1-3
Semarang, Central Java
Indonesia

United States of America

BANERJEE, Tapan
U.S. Agency for International Development
American Embassy
Jakarta
Indonesia

FAO Field Projects

CHEN, Foo Yan
Coordinator
UNDP/FAO Establishment of a Network of
Aquaculture Centres in Asia (NACA)
Project (RAS/76/003)
National Institute of Inland Fisheries
Kasetsart University
Phahonyothin Road
Bangkhen, Bangkok 10900
Thailand

DELMENDO, Medina N.
Project Coordinator
UNDP/FAO Shrimp Culture and Production
(VIE/76/007)
c/o FAO Representative in Viet Nam
P.O. Box 63
Hanoi, Viet Nam

Secretariat

WELCOMME, R.L.
Senior Fishery Resources Officer
Fishery Resources and Environment Division
Fisheries Department
FAO
Via delle Terme di Caracalla
00100 Rome, Italy